Activity Title:

Shark vs. Human

Subject:

The subject(s) of this lesson are Science, Oceanography, Anatomy and Physiology of sharks and humans

Grade Level:

This lesson was used for seventh grade science, but can be adapted for high school.

Average Learning Time:

This lesson plan is written as a unit planner. You need at least two weeks to cover the content.

Lesson Summary:

Students will learn about the twelve human body systems, and compare them to shark body systems.

Overall Concept:

Students will be able to identify major parts of each body system, understand the function of each system, and be able to compare and contrast the human body to a shark body. Students will dissect a dogfish shark.

Specific Concepts:

- The human body has twelve major body systems.
- Humans and Sharks have similar body systems, but the body systems function differently due to their unique design and purpose.

Focus Questions:

- What are the twelve human body systems?
- What are the major body systems of a shark?
- What is the major organ for each body system of a human?
- What is the major organ for each body system of a shark?
- How are the reproductive systems of a human and shark alike?
- Compare and contrast the respiratory system of a human and a shark.
- Compare and contrast the digestive system of a human and shark.
- How is a shark not like a fish?

Objectives/ Learning Goals:

- Students will be able to list the twelve human body systems with 100% accuracy.
- Students will be able to list the major shark body systems with 100% accuracy.
- Students will be able to compare major body systems of a human and shark with 80% accuracy.
- Students will be able to draw a diagram, label, and explain by comparing and contrasting, one human and one shark body system with 80% accuracy.
- Students will work in cooperative groups dissecting a shark, and completing a lab report with 80% accuracy.

Background Information:

The student guide I used for shark dissection was from Carolina Biological Supply. I went over the manual thoroughly with the students reading aloud, and having them use highlighters and take notes. The reading level was difficult for some of my students. However, they were very interested and diligent when taking notes. They really loved this unit, and wanted to do well.

Common Misconceptions/ Preconceptions:

The movie "Jaws" has lead people to believe that sharks kill humans. Statistics show that very few humans have been attacked, injured, or killed by sharks.

Materials:

- Dogfish Shark Bio kit (I ordered my sharks from Carolina Biological Supply, and I received a Teachers Manual with a Student Guide)
- Dissection Tools (You need very sharp razor like scalpels to cut through shark skin)
- Shark Lab Packets (one for each student)
- Garbage Bags (one for each student to make their own lab coats)
- Goggles

Technical Requirements:

- Laptop/ Projector
- Set of Laptops or IPADS to help students which student guides

Teacher Preparation:

- Order sharks ahead of time. Do not remove from boxes till dissection time, because chemicals are very strong.
- Sharks dry out fast, so I put them on plastic garbage bags on student desks. This way bag can be used to dispose dissected shark and parts.

Keywords:

- Lateral Line System
- Rostrum
- Nares
- Spiracles
- Gills
- Clasper
- Pelvic Girdle
- Coelom
- Pleuroperitoneal Cavity
- Pericardial Cavity
- Liver
- Esophagus
- Stomach
- Small Intestine
- Colon
- Papillae
- Rugae
- Duodenum
- Gallbladder
- Pancreas
- Valvular Intestine
- Pancreatic Juice

- Spiral Valve
- Colon
- Cloaca
- Rectal Gland
- Gills
- Pharynx
- Internal Gill Slits
- External Gill Slits
- Gill Rakers
- Gill Lamellae
- Sinus Venosus
- Atrium
- Ventricle
- Conus Arteriosus
- Testes
- Epididymis
- Ductus Deferens
- Seminal Vesicle
- Sperm Sacs
- Ovaries
- Oviducts
- Uterus
- Ostium
- Shell Gland
- Placoid Scales

Pre-Assessment Strategy/ Anticipatory Set:

Ask students to list the characteristics of sharks in their science notebook. Teacher can create a graphic organizer for the classroom with student responses.

Please note that students have studied the human body system prior to this lesson.

Lesson Procedure:

Day 1- Have the students read non-fiction articles about sharks. I found a great one in the newspaper.

Day 2, 3, and 4- Pass out Lab Packets (one per student). I copied the one from Carolina Biological. Depending on the students, I would go over packet orally, having students highlight important information. I also let the students use IPADs to look up answers to the questions.

Day 5- I found "U Tube" videos on shark dissection, and some cool ones on the dogfish shark. My students never dissected before. This helped prepare them.

Day 6- Students examine the external shark body with the teacher helping them identify body plans, body parts, and sex of their specimen. Students wear garbage bag lab coats, goggles, and gloves.

Day 7- Students dissect Dogfish Shark. I personally started the dissection of each shark, because I did not want my students handling sharp scalpels. I used a razor type cutter. I had about six sharks per class with about five kids per group. I wanted to spend time with each group helping them get started.

Day 8- Review and give students time to finish lab reports.
Day 9- Explain project: Students will create a poster comparing a human body system with a shark body system. Each system shall be hand drawn, and labeled, including how each system functions. For example: comparing the shark skeletal system and the human skeletal system. The project is called Shark vs. Human.
Day 10- Allow students to work on project, use of IPADs or laptops would be very helpful.

Assessment and Evaluation:
Students would be assessed and evaluated on Lab Report, Project, and class participation.
Resources:

1. Interactive Virtual Dogfish Shark Dissection

   Title: **Virtual Fetal Pig Dissection Educational Technology Guy**: *Virtual Fetal Pig Dissection* Y3 games - Virtual fetal pig **dissection** game Games Virtual Fetal Pig ...

   m.webtopicture.com/...virtual-**dogfish**-shark-**dissection**.html - Cached

2. Dogfish — FactMonster.com - Fact Monster: Online Almanac...

   Dogfish, name for a number ... the smooth **dogfish** is much used for **dissection** by students of vertebrate anatomy. ... Part of Family **Education** Network ...

   www.**factmonster.com**/encyclopedia/science/**dogfish**.html - Cached
   More results from factmonster.com »

3. Anatomy Dogfish Shark Dissection - April videos - SENSE TUBE

   Anatomy **Dogfish** Shark **Dissection**. ... Trying to dig deep without the **education**. Shark **dissection**. Length: 10:46... This **website** cannot be used to show copyrighted materials.

   tube.7s-b.com/.../Anatomy-**Dogfish**-Shark-**Dissection**.html - Cached

4. Dogfish shark dissection lab - Imarksweb.org

   Legal **Education**; Natural Law; Medicine. Alternative Medicine; Dentistry; Internal Medicine; Medical Informatics; Medical Technology; ... **Dogfish** Shark **Dissection** Fun Facts: ...

   www.**imarksweb.org**/book/dogfish+shark+dissection+lab - Cached

5. Dogfish shark dissection lab - 15 e-books - free download

   Dogfish shark **dissection** lab download on GetBookee.com free books ... A Cost Comparison Between Animal **Dissection** and Humane **Educational** ... **Dogfish** BioLab Fish ...

www.**getbookee.com**/**dogfish**-shark-**dissection**-lab - Cached

6. ZooBlog: Spiny Dogfish Dissection in Zoology

   We finally got around to the **dogfish dissection** today in Zoology class. ... The Video Project: **Educational** Media- Environment, Science & Social Issues;

   zoologyblog.blogspot.com/2010/03/spiny-**dogfish**-**dissection**... - Cached

7. Dogfish Shark Dissection: Digestive System on Balance

   Digital pen and ink illustration of a **dogfish** shark **dissection**. ... shark **dissection** guide alexishippler CIA Digestive System scientific illustration **educational** digital pen ...

   www.**behance.net**/gallery/**Dogfish**-Shark-**Dissection**... - Cached

National Science Standards Addressed:

Students who demonstrate understanding can:
MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

Students who demonstrate understanding can:
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

Ocean Literacy Principles Addressed:

Ocean Literacy Principle #5: The ocean supports a great diversity of life and ecosystems.

Grade Band	Primary Productivity	Diversity of Ecosystems	Diversity of Life
6-8	1. Abundance of life 2. Chemosynthesis 3. Chemosynthetic ecosystems 4. Conditions for photosynthesis 5. Coral reefs 6. Coriolis effect 7. Estuaries 8. Food webs 9. Kelp forests 10. Mangroves 11. Photosynthetic organisms 12. Polar seas	1. Abiotic factors 2. Adaptations for living in the ocean 3. Climate change effect on environments 4. Ecosystems 5. Food webs 6. Habitats 7. Habitat zonation 8. Human effect on environments 9. Physical properties of the	1. Adaptations for living in the ocean 2. Biomass 3. Conditions for diversity 4. Life cycles 5. Life histories 6. Migration 7. Organism diversity 8. Physics of sound 9. Reproduction 10. Size and scale of

	13. Symbiosis 14. Upwelling	ocean	life

State Science Standards Addressed:

12A Know and apply concepts that explain how liv
function, adapt, and change.
12. A.1a Identify and describe the component par
things.
12. A.1b Categorize living organisms using a variet
features.
12B Know and apply concepts that describ12A Kn
concepts that explain how living things function, a
change.
12. A.1a Identify and describe the component par
things.
12. A.1b Categorize living organisms using a variet
features.
12B Know and apply concepts that describe how li
interact with each other and with their environme
12. B.1a Describe and compare characteristics of l
relationship to their environments.
12. B.1b Describe how living things depend on one
survival.
11A Know and apply the concepts, principles, and
scientific inquiry.
11B Know and apply the concepts, principles, and
technological design.
13A Know and apply accepted practices of science
13B Know and apply concepts that describe the in
between science, technology, and society's how li
interact with each other and with their environme
12. B.1a Describe and compare characteristics of l
relationship to their environments.
12. B.1b Describe how living things depend on one
survival.

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Creation Date:

March, 2013